



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5 CHICAGO REGIONAL LABORATORY
536 SOUTH CLARK STREET
CHICAGO, ILLINOIS 60605



Date: 10/26/2017

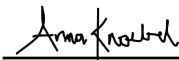
Subject: Review of Region 5 Data for U.S. Steel - Minntac Tailings Basin Area Facility

To: Water Division, WECA Region 5
77 West Jackson Boulevard
Chicago, IL 60604

From: Anna Knoebel, Chemist
US EPA Region 5 Chicago Regional Laboratory

The data transmitted under this cover memo successfully passed CRL's data review procedures as documented in the current Quality Management Plan and applicable Standard Operating Procedures. In accordance with the EPA QA/G-8 *Guidance on Environmental Data Verification and Data Validation* and the U.S. EPA Region 5 RMD QMP, CRL performs data verification on all the data generated internally. CRL does not perform data validation or quality assessment procedures.

This report was reviewed and the information provided herein accurately represents the analysis performed.

X 

Please contact the analyst with any technical report issues, Robert Thompson at (312)-353-9078 for sample project concerns, and Sylvia Griffin at (312)-353-9073 with data transmittal questions. Thank you.

Attached are Results for: U.S. Steel - Minntac Tailings Basin Area Facility

Data Coordinator and Date Transmitted

Analyses included in this report:

Anions by IC



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Project: U.S. Steel - Minntac Tailings Basin Area Facility
Project Number: 02DM17
Project Manager: Dean Maraldo

Reported:
Oct-26-17 09:36

ANALYSIS CASE NARRATIVE – Anions by IC

Work order #: 1709003
Analyst: Anna Knoebel
Phone #: (312) 353-9467

General Information

Sixteen samples for Anions by IC (fluoride, chloride, sulfate, and bromide) were received on September 14, 2017. All holding times were met.

Sample Analysis and Results

The samples were analyzed September 26 – 28, 2017 for Anions by IC in water using CRL SOP AIG045A, Version #6 (SOP based on EPA 300.0). The data reported herein meets any laboratory specifications referenced in the sampling QAPP titled “MN0057207_Minntac_QAPPSAMP_20170831” and the requirements referenced in CRL SOP AIG045A, Version #6 (SOP based on EPA 300.0) except for those listed in the QC section below.

Quality Control

Matrix Spike (MS)

The chloride and sulfate matrix spike recoveries for samples 1709003-04 (S04) and 1709003-11 (S11) were negative and below the acceptance criteria (80 – 120 %). These samples were diluted, as a result, the spikes were diluted out causing the spike result to be invalid. The sample results were not qualified on this basis.

The fluoride matrix spike recoveries for sample 1709003-04 (S04) and 1709003-11 (S11) were also below the acceptance criteria (80 – 120 %). There may be some matrix interferences and the reported values may be biased low. The fluoride sample results were qualified “L” (The identification of the analyte is acceptable; the reported value may be biased low. The actual value is expected to be greater than the reported value).

Duplicate (DUP)

The bromide %RPD for sample 1709003-11 (S11) and its duplicate was above the acceptance criteria ($\leq 20\%$). The sample result was qualified “J” (The identification of the analyte is acceptable; the reported value is an estimate).

Continuing Calibration Blank (CCB)

Six out of the ten CCB results for sulfate were above the MDL (0.02 mg/L). Sulfate was below the MDL in the other blanks. This blank contamination is most likely due to carryover from the high levels of sulfate in the samples. Sample 1709003-16 (R16) was qualified “J” (The identification of the analyte is acceptable; the reported value is an estimate). The remaining sample results were not affected by the blank contamination.



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because they were more than ten times the CCB result, no qualifiers were necessary.

All other quality control audits were within CRL limits or did not result in qualification of the data.



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ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
S01	1709003-01	Water	Sep-12-17 09:57	Sep-14-17 13:26
S02	1709003-02	Water	Sep-12-17 10:23	Sep-14-17 13:26
S03	1709003-03	Water	Sep-12-17 10:50	Sep-14-17 13:26
S04	1709003-04	Water	Sep-12-17 11:08	Sep-14-17 13:26
D05	1709003-05	Water	Sep-12-17 11:08	Sep-14-17 13:26
S06	1709003-06	Water	Sep-12-17 11:30	Sep-14-17 13:26
S07	1709003-07	Water	Sep-12-17 11:51	Sep-14-17 13:26
S08	1709003-08	Water	Sep-12-17 14:03	Sep-14-17 13:26
S09	1709003-09	Water	Sep-12-17 15:00	Sep-14-17 13:26
S10	1709003-10	Water	Sep-12-17 15:15	Sep-14-17 13:26
S11	1709003-11	Water	Sep-13-17 09:44	Sep-14-17 13:26
S12	1709003-12	Water	Sep-13-17 09:49	Sep-14-17 13:26
S13	1709003-13	Water	Sep-13-17 09:55	Sep-14-17 13:26
S14	1709003-14	Water	Sep-13-17 10:23	Sep-14-17 13:26
S15	1709003-15	Water	Sep-13-17 11:10	Sep-14-17 13:26
R16	1709003-16	Water	Sep-13-17 12:52	Sep-14-17 13:26



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Anions by Ion Chromatography, EPA 300.0 (modified)
US EPA Region 5 Chicago Regional Laboratory

S01 (1709003-01) Matrix: Water Sampled: Sep-12-17 09:57 Received: Sep-14-17 13:26

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Fluoride	0.30			0.02	mg/L	1	B17I037	Sep-26-17	Sep-26-17
Chloride	26.1			0.12	"	"	"	"	"
Sulfate as SO4	314			0.62	"	5	"	"	Sep-27-17
Bromide	U			0.12	"	1	"	"	Sep-26-17

S02 (1709003-02) Matrix: Water Sampled: Sep-12-17 10:23 Received: Sep-14-17 13:26

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Fluoride	0.28			0.02	mg/L	1	B17I037	Sep-26-17	Sep-26-17
Chloride	25.3			0.12	"	"	"	"	"
Sulfate as SO4	532			1.25	"	10	"	"	Sep-27-17
Bromide	U			0.12	"	1	"	"	Sep-26-17

S03 (1709003-03) Matrix: Water Sampled: Sep-12-17 10:50 Received: Sep-14-17 13:26

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Fluoride	1.08			0.02	mg/L	1	B17I037	Sep-26-17	Sep-26-17
Chloride	96.0			0.25	"	2	"	"	Sep-27-17
Sulfate as SO4	945			2.50	"	20	"	"	Sep-27-17
Bromide	1.18			0.12	"	1	"	"	Sep-26-17

S04 (1709003-04) Matrix: Water Sampled: Sep-12-17 11:08 Received: Sep-14-17 13:26

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Fluoride	1.44	L		0.02	mg/L	1	B17I037	Sep-26-17	Sep-26-17
Chloride	102			0.25	"	2	"	"	Sep-27-17
Sulfate as SO4	925			2.50	"	20	"	"	Sep-28-17
Bromide	0.67			0.12	"	1	"	"	Sep-26-17

D05 (1709003-05) Matrix: Water Sampled: Sep-12-17 11:08 Received: Sep-14-17 13:26

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Fluoride	1.32			0.02	mg/L	1	B17I037	Sep-26-17	Sep-26-17
Chloride	102			0.25	"	2	"	"	Sep-27-17



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D05 (1709003-05)

Matrix: Water

Sampled: Sep-12-17 11:08

Received: Sep-14-17 13:26

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Sulfate as SO4	950			2.50	mg/L	20	B17I037	Sep-26-17	Sep-27-17
Bromide	0.63			0.12	"	1	"	"	Sep-26-17

S06 (1709003-06)

Matrix: Water

Sampled: Sep-12-17 11:30

Received: Sep-14-17 13:26

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Fluoride	1.00			0.02	mg/L	1	B17I037	Sep-26-17	Sep-26-17
Chloride	87.8			0.12	"	"	"	"	"
Sulfate as SO4	847			2.50	"	20	"	"	Sep-27-17
Bromide	0.48			0.12	"	1	"	"	Sep-26-17

S07 (1709003-07)

Matrix: Water

Sampled: Sep-12-17 11:51

Received: Sep-14-17 13:26

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Fluoride	0.28			0.02	mg/L	1	B17I037	Sep-26-17	Sep-26-17
Chloride	11.7			0.12	"	"	"	"	"
Sulfate as SO4	343			0.62	"	5	"	"	Sep-27-17
Bromide	U			0.12	"	1	"	"	Sep-26-17

S08 (1709003-08)

Matrix: Water

Sampled: Sep-12-17 14:03

Received: Sep-14-17 13:26

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Fluoride	0.10			0.02	mg/L	1	B17I037	Sep-26-17	Sep-26-17
Chloride	1.28			0.12	"	"	"	"	"
Sulfate as SO4	3.61			0.12	"	"	"	"	"
Bromide	U			0.12	"	"	"	"	"

S09 (1709003-09)

Matrix: Water

Sampled: Sep-12-17 15:00

Received: Sep-14-17 13:26

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Fluoride	0.55			0.02	mg/L	1	B17I037	Sep-26-17	Sep-26-17
Chloride	122			0.25	"	2	"	"	Sep-27-17
Sulfate as SO4	702			1.25	"	10	"	"	Sep-27-17
Bromide	0.73			0.12	"	1	"	"	Sep-26-17



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S10 (1709003-10)

Matrix: Water

Sampled: Sep-12-17 15:15

Received: Sep-14-17 13:26

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Fluoride	0.64			0.02	mg/L	1	B17I037	Sep-26-17	Sep-26-17
Chloride	91.2			0.25	"	2	"	"	Sep-27-17
Sulfate as SO4	720			1.25	"	10	"	"	Sep-27-17
Bromide	0.57			0.12	"	1	"	"	Sep-26-17

S11 (1709003-11)

Matrix: Water

Sampled: Sep-13-17 09:44

Received: Sep-14-17 13:26

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Fluoride	1.97	L		0.02	mg/L	1	B17I037	Sep-26-17	Sep-26-17
Chloride	114			0.25	"	2	"	"	Sep-27-17
Sulfate as SO4	773			1.25	"	10	"	"	Sep-27-17
Bromide	0.68	J		0.12	"	1	"	"	Sep-26-17

S12 (1709003-12)

Matrix: Water

Sampled: Sep-13-17 09:49

Received: Sep-14-17 13:26

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Fluoride	1.64			0.02	mg/L	1	B17I037	Sep-26-17	Sep-26-17
Chloride	114			0.25	"	2	"	"	Sep-27-17
Sulfate as SO4	780			1.25	"	10	"	"	Sep-27-17
Bromide	0.63			0.12	"	1	"	"	Sep-26-17

S13 (1709003-13)

Matrix: Water

Sampled: Sep-13-17 09:55

Received: Sep-14-17 13:26

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Fluoride	1.78			0.02	mg/L	1	B17I037	Sep-26-17	Sep-26-17
Chloride	110			0.25	"	2	"	"	Sep-27-17
Sulfate as SO4	781			1.25	"	10	"	"	Sep-27-17
Bromide	0.51			0.12	"	1	"	"	Sep-26-17

S14 (1709003-14)

Matrix: Water

Sampled: Sep-13-17 10:23

Received: Sep-14-17 13:26

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Fluoride	0.13			0.02	mg/L	1	B17I037	Sep-26-17	Sep-26-17
Chloride	5.24			0.12	"	"	"	"	"
Sulfate as SO4	107			0.25	"	2	"	"	Sep-27-17
Bromide	U			0.12	"	1	"	"	Sep-26-17



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S15 (1709003-15)

Matrix: Water

Sampled: Sep-13-17 11:10

Received: Sep-14-17 13:26

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Fluoride	0.18			0.02	mg/L	1	B171037	Sep-26-17	Sep-26-17
Chloride	18.8			0.12	"	"	"	"	"
Sulfate as SO4	418			1.25	"	10	"	"	Sep-27-17
Bromide	U			0.12	"	1	"	"	Sep-26-17

R16 (1709003-16)

Matrix: Water

Sampled: Sep-13-17 12:52

Received: Sep-14-17 13:26

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Fluoride	U			0.02	mg/L	1	B171037	Sep-26-17	Sep-26-17
Chloride	U			0.12	"	"	"	"	"
Sulfate as SO4	0.12	J		0.12	"	"	"	"	"
Bromide	U			0.12	"	"	"	"	"



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Notes and Definitions

- L The identification of the analyte is acceptable; the reported value may be biased low. The actual value is expected to be greater than the reported value.
- J The identification of the analyte is acceptable; the reported value is an estimate.
- U Not Detected
- NR Not Reported
- Q QC limit Exceeded